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- (88) Date of publication of the international search report:
15 January 2004
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(54) Title: A METHOD FOR THE ESTABLISHMENT OF A PLURIPOTENT HUMAN BLASTOCYST-DERIVED STEM CELL LINE

(57) Abstract: The present invention concerns a method for the establishment of pluripotent human blastocyst-derived stem (BS) cell line, stem cells obtained by the method, differentiation of these cells into differentiated cells, the differentiated cells and the use of these differentiated cells in the preparation of medicaments. The undifferentiated pluripotent stem cells can be made to differentiate to a number of specialized cell types which can be utilized in the manufacture of medicaments for treating a number of conditions or pathologies involving degeneration of tissue e.g. of the pancreas leading to e.g. development of diabetes, or of the CNS (e.g. Alzheimer's, Parkinson's disease etc.) or degeneration of the CNS caused by e.g. stroke or physical trauma.

INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/EP 02/14895

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N5/08 A61K35/04 A61P5/48 A61P25/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, MEDLINE, BIOSIS, CHEM ABS Data, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 200 806 B1 (THOMSON JAMES A) 13 March 2001 (2001-03-13) cited in the application	32, 33
Y	abstract column 1, line 24 - line 27 column 4, line 8 - line 16 column 8, line 25 - line 43 column 8, line 66 - column 9, line 3 column 9, line 15 - line 32 --- -/--	1-25

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

22 July 2003

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08/08/2003

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INTERNATIONAL SEARCH REPORT

Interr I Application No
PC1/EP 02/14895

C.(Continuation) DOCUMENTS CONSIDERED RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	ROPETER-SCHARFENSTEIN M ET AL: "IDENTIFICATION, ISOLATION AND CULTURE OF PLURIPOTENT CELLS FROM THE PORCINE INNER CELL MASS" JOURNAL OF ANIMAL BREEDING AND GENETICS, vol. 113, 1996, pages 427-436, XP000971297 ISSN: 0931-2668 page 429, last paragraph page 431, last paragraph ---	1-25
Y	WO 97 20035 A (UNIV UTAH STATE) 5 June 1997 (1997-06-05) page 3, line 11 - line 12 page 3, line 19 - line 22 page 4, line 19 - line 25 example 7 ---	12
X	KELLER G. ET AL.: "Human embryonic stem cells: the future is now." NATURE MEDICINE, vol. 5, no. 2, February 1999 (1999-02), pages 151-152, XP002248478 ISSN: 1078-8956 ---	26
Y	page 151, right-hand column, paragraph 2 -page 152, left-hand column, paragraph 1 ---	30,31
X	LUMELSKY NADYA ET AL: "Differentiation of embryonic stem cells to insulin-secreting structures similar to pancreatic islets" SCIENCE, vol. 292, no. 5520, 2001, pages 1389-1394, XP002183377 ISSN: 0036-8075 cited in the application the whole document, especially Fig.1 ---	27-29, 34-44, 47-50, 53,54
A	WO 01 83715 A (LEE SANG HUN ;MCKAY RON D G (US); STUDER LORENZ (US); US HEALTH (U) 8 November 2001 (2001-11-08) page 19, line 23 - line 35 ---	27-29, 34-44, 47-50, 53,54
P,X	WO 02 059278 A (KIM JONG-HOON ;BLONDEL OLIVER (US); MC KAY RONALD D (US); GOVERNME) 1 August 2002 (2002-08-01) page 3, line 11 - line 28 page 1 page 25, line 6 - line 19 ---	34-44, 47-50, 53,54

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INTERNATIONAL SEARCH REPORT

Intern: Application No

PCT/EP 02/14895

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	OKABE S ET AL: "DEVELOPMENT OF NEURONAL PRECURSOR CELLS AND FUNCTIONAL POSTMITOTIC NEURONS FROM EMBRYONIC STEM CELLS IN VITRO" MECHANISMS OF DEVELOPMENT, vol. 59, 1996, pages 89-102, XP001052878 ISSN: 0925-4773	45,46, 51,52
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A	WO 99 27076 A (LORING JEANNE F ;ARC GENOMIC RESEARCH (US)) 3 June 1999 (1999-06-03) abstract page 6, line 1 - line 5	1-25
A	US 5 905 042 A (GOLUEKE PAUL J ET AL) 18 May 1999 (1999-05-18) column 4, line 25 - line 35	1-25
A	US 6 190 910 B1 (KAMON TOSHIO ET AL) 20 February 2001 (2001-02-20) column 3, line 1 - line 18	1-25
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INTERNATIONAL SEARCH REPORT

In — onal application No.
— PCT/EP 02/14895

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-25,32,33

Subject-matter relating to a method of obtaining a pluripotent human blastocyst-derived stem cell line.

2. Claim : 26

Subject-matter relating to the use of differentiated cells for the manufacture of a medicament for the prevention or treatment of pathologies or diseases caused by tissue degeneration except for diseases in the nervous system.

3. Claims: 27-29,34-44,47-50,53,54

Subject-matter relating to the use of differentiated cells for the manufacture of a medicament for the prevention or treatment of pathologies or diseases in the pancreas including diabetes and a method for producing insulin-producing differentiated stem cells.

4. Claims: 30,31,45,46,51,52

Subject-matter relating to differentiated stem cells which display neuronal cell type markers and their use for the manufacture of a medicament for the prevention or treatment of pathologies or diseases in the nervous system.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern Application No

PCT/EP 02/14895

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